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ABSTRACT

An overview and analysis is presented of the Vance and Schlechty Study (1982) of education majors which indicated that there is a negative selection process which systematically attracts and holds in the teaching profession young people with modest verbal and mathematical abilities. Three factors, operating singly or in combination, were identified as significant in the negative selection process: societal factors, the collegiate environment, and the nature and culture of schools. A report is given of a parallel study conducted with education majors at Michigan State University (MSU). This study included aptitude measures of students as well as queries on their career plans. Tables illustrate results of scholastic aptitude tests for each of the studies. A comparison of the two studies includes a discussion on some of the differences in the findings as well as a brief interpretation of implications of the MSU findings. (JD)

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Research and Evaluation in Teacher Education

Program Evaluation Series No. 5

The Relation Between Academic Aptitude and Commitment to Teaching Among MSU Students

Joe L. Byers

Department of Teacher Education
and
Office of Program Evaluation

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The Relation Between Academic Aptitude and Commitment to Teaching Among MSU Students

Joe L. Byers

The Relation Between Academic Aptitude and Commitment To Teaching Among MSU Students

The motivation for this report is found in a variety of sources. The popular press is replete with stories describing the frustration of the talented young when they attempt to enter the teaching profession. Sometimes the problem has been the discouragement provided by well meaning friends, family and Liberal-Arts College counselors. Dunne(1984) reports that for the ten years she has been at Dartmouth College she has, "responded to anguished telephone calls from parents, begging me not to let their brilliant sons 'waste' their education on a teaching career." Dunne continues by noting that many liberal arts institutions, "actively deride the field of precollege teaching" thus reducing the likelihood that the more talented of their graduates may take up Professional Education at the graduate level through a Master of Arts in Teaching or similar program.

Other events reported in Education Week (3/21/84) have suggested that Teacher Education Programs have been and continue to be a major reason for the discouragement of the most talented. It is often alleged they place irrelevant impediments in the way of those who would be teachers.

However, the most direct stimulus for this paper comes not from reports of the loss of the gifted and talented but rather from the obverse of the coin. Recent studies have presented evidence to the effect that there seems to be a negative selection process at work which systematically attracts and then holds in the teaching profession those young people with modest verbal and quantitative abilities. For instance Vance and Schlechty(1982) report a distressing differential loss to Profession Education from the brighest young students. This report will discuss the Vance & Schlechty(1982) findings and present some new information which further understanding of the meaning of their results.

The Vance and Schlechty Study

In a subsample of the National Longitudinal Study of 1972 High School Seniors(1978) it was reported that 4416 had earned at least a BS/BA degree by 1979. Some of these students indicated that during the period between 1972 and 1979 they had; (1)majored in Education, (2)taught school (other than college), or (3)obtained a certificate to teach. Vance & Schlechty(1982) designated these college graduates as "recruits". They along with the remaining non-recruits were rank ordered separately by SAT-Verbal and SAT-Quantitative scores. The ranked SAT scores were then divided into five roughly equal groups called "ranks". Vance & Schlechty then decomposed the recruits into several subgroups depending upon their level of involvement and commitment to teaching.

Recruits were first divided into those who had reported actual teaching activities between 1976 and 1979 and those who did not teach in that interval. The latter group was labeled "Non-teachers". Those who had taught, (called "teachers") and who further indicated they expected to be teaching by the time they were thirty years old were designated "Committed Teachers". Finally, there were those who reported they

did not believe they would be teaching by age 30. This group was split into two subgroups; one who had taught but was no longer teaching, called "Confirmed Defectors" and those who were teaching but expected to leave the profession prior to their 30th birthday, who were labeled "Defectors".

Table 1

Measured Abilities on the Scholastic Aptitude Test*

GROUPS	Lowest Rank	Second Lowest Rank	Middle Rank	Second Highest Rank	Highest Rank	Std. Dev.	Mean	N
Verbal Ability								
Non-Recruits	15.1	21.5	20.0	21.5	21.9	105.7	496.5	1994
Recurits	29.8	24.1	19.9	16.0	10.2	102.4	447.9	627
Non-Teachers	30.5	22.2	17.4	16.8	13.2	108.4	449.5	167
Teachers	29.6	24.8	20.9	15.7	9.1	100.3	447.4	460
Committed Teachers	34.1	27.0	19.5	14.6	4.9	94.7	432.0	226
Defectors	25.2	22.7	22.2	16.7	13.3	103.4	462.3	234
Confirmed Defect	26.7	24.0	18.7	14.7	16.0	113.2	459.7	75
% of Total Recrtd	38.4	26.0	23.9	18.9	12.8			
% Who Taught	27.9	19.7	18.3	13.6	8.4			
% Committed	15.8	10.5	8.4	6.2	2.2			
% Recruits Lost	58.8	59.6	64.8	67.0	82.8			
Mathematical Reasoning Ability								
Non-Recruits	16.0	18.1	19.6	23.7	22.6	108.0	537.4	1988
Recruits	30.4	27.5	18.7	14.5	8.9	104.6	478.6	626
Non-Teachers	29.9	26.9	15.0	13.8	14.4	112.7	485.2	167
Teachers	30.5	27.7	20.0	14.8	7.0	101.4	476.3	459
Committed Teachers	29.3	32.0	21.8	13.8	3.1	93.1	469.7	225
Defectors	31.6	23.5	18.4	15.8	10.7	108.6	482.6	234
Confirmed Defect	32.0	26.7	14.7	13.3	13.3	116.5	483.5	75
% of Total Recrtd	37.3	32.4	23.1	16.2	11.1			
% Who Taught	27.5	23.9	18.2	12.1	6.3			
% Committed	13.0	13.6	9.7	5.5	1.4			
% Recruits Lost	65.3	65.3	58.1	58.1	65.9	87.5		

* Source: Tables 1 & 2 Vance & Schlechty(1982)

Table 1 presents the data for the Vance and Schlechty(1982) study and shows the percent of college graduates in each of the seven groups and five SAT ranks. Their argument for a negative selection process can be summarized by studying the last row in Table 1. This row reports the percent of college graduates who were recruited into the teaching profession and were lost to it during the period of their college and/or early professional life. For those students in the highest rank on the SAT-Verbal(over 585) 82.8% who qualified as teaching "recruits", left teaching. When graduates in the lowest rank(less than 408) are considered only 58.8% were lost to the

profession. Looking at it another way at the time of recruitment three graduates from the lowest rank entered Education for every one recruit from the highest rank. In terms of "committed teachers" this ration grew to about six or seven lowest rank teachers for every one "highest rank" teacher. Clearly an unhappy state! Roughly parallel results occured forthe SAT Quantitative data(lower portion of Table 1).

If this negative selection process is going on, it behooves us to attempt to understand how it operates. There are at least three potential origins that may be operating singly or in combination with one another. First,the process might begin long before the potential teacher ever reaches college. Were this the case, one might expect to find that societal factors would combine to convince those with modest abilities that teaching is a good profession to considerand at the same time persuade those with higher levels of ability that teaching is an inappropriate career choice..

A second cite where negative selection could occur is the collegiate environment. Perhaps as Dunne(1984) has illustrated with her personal reflections; the phenomenon can be widely duplicated in colleges and universities across the land. Also the programs of teacher education may be a source for sorting potential teachers, encouraging the more modestly endowed to continue their professional development and driving others away in frustration. Certainly this explanation is a favorite of many of the most vocal critics of teacher education.

Finally, the source of the negative selection that has been observed may be embedded in the nature and culture of schools. Many have claimed that schools are a hostile environment. In recent years there has been considerable research activity surrounding the topic of teacher "burnout". Perhaps in such a stressful environment the more talented have a greater number of vocational alternatives available to them and so leave the profession in disproportionate numbers. School district personnel policies may also contribute to this negative selection by searching for new staff members who are not too bright or too highly motivated.

Although the idea may not be very comforting at first blush one would hope that the negative selection process is indeed sensitive to the collegiate environment including the nature of the teacher education programs. For if that is the case, then the problem, is within the sphere of influence of professional teacher education. Should it be otherwise then there would be very little that colleges of teacher education could do in a direct fashion to ameliorate this condition. Evidence that the selection process is sensitive to T.E. program effects could be derived from a parallel analysis of recruitment and loss conducted within a single higher education institution. If the data from such a study yield estimates of loss different from those reported by Vance & Schlechty(1982) then the process is influenced by institutional and/or program variables.

This paper then reports a study which will present data parallel to those offered by Vance & Schlechty(1982). As shall be seen the data were not gathered in the same manner and there are some serious caveats which must be born in mind as the results are set forth.

PROCEDURES

Before describing in detail the procedures used in this study, its similarities and differences compared to Vance & Schlechty(1982) should be made explicit. As noted, Vance & Schlechty used a nation wide sample. The SAT scores were obtained at the time the students were in high school(ca., 1970-1972). The data used to construct the various subgroups presented in Table 1 were gathered sometime after 1979 and represented the <u>experiences</u> the graduates had had (except for the prediction about teaching or not teaching when they were thirty). In a sense then the data were retrospective in nature.

In the study to be reported here the aptitude measures were obtained at about the same point in the students' careers; near the end of their high school. Although these students represent young men and women of the same age as those in the V&S study they are from a different age cohort; most graduated from high school between 1979 and 1982. More importantly, the data gathered about their professional commitment is prospective. It was obtained at the time of <u>entrance</u> to the first course in professional education.

Students entering the five teacher education programs at Michigan State University responded to questionnaires which among other things asked them about their teaching career plans. Data from these surveys gathered over the last two years constitute the main source of information for this report. The only additional source of data came from a group of non-education students who were enrolled in an introductory communication course(Book, Freeman & Brousseau, 1984). These students were selected so they roughly matched the education students in age and year in school. They served as the "non-recruit" group for this study.

For students entering teacher education programs (the "recruit" group) their responses to items on career plans were used to create subgroups paralleling those of V&S. The following item was used to define the "teacher" and "non-teacher" groups.

> Which of the following best describes where teaching fits your current career plans?
> (1) Classroom teaching is the only career I am considering at this point in time.
> (2) Classroom teaching is my first choice of the careers I am considering.
> (3) Classroom teaching has some appeal, but is not my first choice among careers...
> (4) I do not intend to become a classroom teacher.

Students choosing alternatives one through three of the item were designated as "teachers" and those selecting number four were "non-teachers". A second item was used to define the remaining parallel groups; "confirmed defectors", "defectors", and "committed teachers".

> If you are successful in finding a job, what is your 'best guess' of the length of time you will work as a teacher?
> (1) less than five years.
> (2) five to ten years.
> (3) more than ten years.

Those students responding that they plannned to teach less than five years were designated as "confirmed defectors". Students planning to teach from five to ten years were classed as "defectors", and those intending to continue more than ten years as the "committed teacher".

The combined size of the "Recruit" and "non-Recruit" groups was 884. SAT scores for as many students in this total sample as possible were obtained from the University Office of Admissions. Many students attending Michigan State University present ACT scores rather than the SAT to complete admissions requirements. Fortunately, a fair sized group reported both sets of test scores. Since V&S had used the SAT and our purpose was to parallel as closely as possible their analysis it was decided to use the ACT scores to predict SAT scores where only the former were available. The results led to a final sample of 379. As can be seen this was a rather large loss of data due the fact that many student records had neither ACT nor SAT scores.

Once the data were prepared and the subgroups defined, the same ranking process was applied to the Michigan State University sample as V&S had used with their National Longitudinal Study sample(1978).

RESULTS

Table 2 presents the results of the Michigan State sample cast in the same manner as those reported in Table 1 for V&S.

Table 2

Measured and Estimated Abilities on the Scholastic Aptitude Test for Students at Michigan State University

GROUP	Lowest Rank	Second Lowest Rank	Middle Rank	Second Highest Rank	Highest Rank	Std. Dev.	Mean	N
Verbal Ability								
Non-Recruits	40.0	36.7	16.7	5.0	1.7	74.2	422.7	120
Recruits	22.4	32.4	18.5	18.9	7.7	86.2	469.4	259
Non-Teachers	25.6	23.6	18.6	14.0	16.3	85.8	478.4	43
Teachers	21.8	33.8	18.5	19.9	6.0	86.1	467.6	216
Committed Teachers	24.6	32.8	19.7	16.4	6.6	92.2	463.1	122
Defectors	9.3	36.1	16.9	21.7	6.0	78.7	470.9	83
Confirmed Defectors	9.1	27.3	18.2	45.5	0.0	74.9	492.7	11
% of Total Recrts	54.7	65.6	70.6	89.1	90.9			
% who Taught	44.3	57.0	58.8	78.2	59.1			
% Committed	28.3	31.3	35.3	36.4	36.4			
% Recruits Lost	48.3	52.3	50.0	59.2	60.0			
Mathematical Reasoning Ability								
Non-Recruits	32.5	30.0	18.3	15.0	3.3	89.6	481.6	120
Recruits	25.9	29.3	23.9	16.6	4.2	85.5	498.0	259
Non-Teachers	25.6	20.9	27.9	25.6	0.0	84.2	497.6	43
Teachers	21.8	33.8	18.5	19.9	6.0	86.1	467.6	216
Committed Teachers	24.6	32.8	19.7	16.4	6.6	92.2	463.1	122
Defectors	9.3	36.1	16.9	21.7	6.0	78.7	470.9	83
Confirmed Defectors	9.1	27.3	18.2	45.5	0.0	74.9	492.7	11
% of Total Recrts	54.7	65.6	70.6	89.1	90.9			
% who Taught	44.3	57.0	58.8	78.2	59.1			
% Committed	28.3	31.3	35.3	36.4	36.4			
% Recruits Lost	48.3	52.4	50.0	59.2	60.0			

There are some obvious differences in the results of the two studies. A comparison of the Non-Recruit groups revealed that there were reliably different mean SAT scores for both Verbal and Quantitative measures; $F=56.8$, ($MSE=10853.2$, $df=1/2112$, $p<0.01$) and $F=30.7$, ($MSE=11456.6$, $df=1/2106$, $p<0.01$) respectively. Not only did

the V&S sample of non-recruits have a reliably higher mean it was also about twice as variable as the MSU sample. Such a finding is not surprising as the V&S non-recruits was an unselected sample representing all majors.

The MSU nonrecruit group was composed of a relatively homogeneous group of students preparing for careers in business and industry, the arts((commercial art, the performing arts,etc.), the professions of law and medicine, and the health and social care fields. Notably absent were those student in the physical, and natural sciences and engineering. These latter groups were included in the nonrecruits of the V&S study.

When the "recruits" from the V&S sample were compared to the "recruits" from MSU the latter were found to have reliably higher mean SAT scores in both Verbal and Quantitative areas; $F=8.88$ (MSE=9594, $df=1/884$, $p<0.01$) for Verbal and $F=6.98$ (MSE=9889.3, $df=1/883$, $p<0.01$) for quantitative.

Although there was a difference in the mean Verbal SAT scores for the two groups of "recruits", the ratio of highest rank to lowest rank was almost the same; 2.92 for V&S and 2.91 for MSU. In both recruit groups there were three lowest ranks students for each one highest rank student. When the parallel ratior for "committed teachers" in each sample were computed an interesting difference arose. As noted, the V&S sample ration was almost 7 to 1 (6.96 to 1). The ratio in the MSU sample was found to be not quite 4 to 1 (3.73 to 1). Both samples reflected a differential loss, less from the lowest ranks and more from the highest ranks. However, it was much greater for the V&S sample.

Examination of the Quantitative measures revealed that in the V&S sample only two highest rank students were recruited for every seven lowest rank students(3.42 to 1) and the ration in the MSU sample was slightly over six to one (6.17 to 1). The ratio of highest to lowest rank "committed teachers" in the V&S sample showed the differential loss paralleling that reported for Verbal Scores. On the other hand, in the MSU sample a different result was found; the reduction from the lowest rank was greater than that from the highest rank. As a consequence the ratio of highest to lowest improved slightly, to just under six to one(5.80 to 1).

Table 3

Comparison of Percent of Ranks "Committed to Teaching" for the V&S and MSU Samples

	V & S		MSU	
RANK	Verbal	Quant.	Verbal	Quant.
Lowest Rank	15.8	13.0	28.3	27.4
Second Lowest Rank	10.5	13.6	31.3	42.0
Middle Rank	8.4	9.7	35.3	27.4
Second Highest Rank	4.2	5.5	36.4	29.0
Highest Rank	2.2	1.4	36.4	33.3

Table 3 shows another way of comparing the two samples. In this table two points are worth noting. First, there was generally a higher percentage at <u>all</u> ranks of the MSU sample who were "committed teachers". Second, SAT rank group did not seem to vary in the MSU sample in the same fashion it did in the V&S sample. Clearly, in the latter sample "committed teachers" were drawn more heavily from the lower ranks.

Discussion and Conclusions

Care must be used in the interpretation of the these comparisons. It may be fair to say that they indicate that the negative selection process is sensitive to some aspects of program variables. However, it must be kept in mind that V&S collected their data from <u>graduates</u> who had gone through some kind of pre-service experience and/or had actually taught. In this sense their sample represents the "workings" of the process for those going through it (assuming of course that the selection occurs in or around the college years). With the data from MSU the most that can be said is the groups may represent a self-selection of students into a teacher education program. Even at that, the MSU data imply that the image of a particular teacher education program may influence the kinds of students who are attracted to it. Apparently, MSU's programs attract students who on the average are more capable and optimistic about their future in teaching than those in the V&S sample.

In time we should be able to offer data on our own college graduates which more directly match the conditions of the Vance and Schlechty(1982) study. For now, we have some evidence that our student body is more optimistic about its future in teaching and most importantly that the "body" contain a goodly proportion of able students as determined by SAT measures.

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s determined primarily by the
eacher candidates agreed with this
on-teachers (40%) who agreed that "Gifted
special schools or centers," was nearly
tage of entering teacher candidates

ns": During the process of developing
e MSU Educational Beliefs Inventory, 50
rs made two judgments regarding each
to the overall goals of your program,
each statement - should they agree,
opinion? and (2) How important is it
his belief?* Responses to the second
oint scale from 1 = unimportant to 5 =
ements the faculty evaluated still appear
urvey. Within this set of 42 statements
"experts" that 13 beliefs were very
five of MSU's teacher preparation
culty also agreed on the direction in
should be shaped (i.e., that graduates
with the statement). Items in this
endix. They are: #85, 87, 89, 91, 92,
, and 127.

that their interpretation of program goals did
w program graduates should respond. Results of
d in Byers and Freeman (1983).

classroom teacher?," candidates were less likely to talk about p
personal growth and somewhat more likely to talk about enhancing
achievement (see Table 17). This shift seems to indicate that er
teacher candidates are more likely to view the goal of promoting
growth as something teachers are expected to do than as the goal
personally consider to be most important.

Insert Table 17 about here

(7B) How Attainment of Goal Will Be Assessed

Responses to the question, "How will you know whether or no
have achieved this goal?" are summarized in Table 18. Although a
were most likely to focus on observations or other ongoing inter
with students, seven of the 28 candidates indicated that they wo
to both formal (e.g., tests) and informal (e.g., observations) s
information when making these judgements. At the other extreme,
candidates had no idea how they could determine if they had achi
their primary goal or made no reference to sources of informatio
answering the question.

Insert Table 18 about here

(9) Subject Matter Knowledge

Classifications summarized in Table 19 indicate that most e
candidates have not given much consideration to the question, "Wh
a teacher needs to understand about a subject matter to teach it
effectively?" More than one-half of the 28 participants talked or
the need to know the subject itself (categories 5A & 5B); the d

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ventory (cont.)

pped students can be best served in special
enters.

	AGREE	NEITHER	DISAGREE	p
	28.8	32.2	39.0	.26
s	21.9	32.4	45.7	

uld strive to establish an informal, student-
ssroom rather than a businesslike, teacher-
osphere.

	AGREE	NEITHER	DISAGREE	p
	65.0	20.5	14.4	.01
s	56.9	33.3	9.8	

qual educational opportunities, schools must
e resources (personnel and finances) to some
udents than to others (e.g., gifted,
andicapped).

	AGREE	NEITHER	DISAGREE	p
	56.1	27.4	16.4	.41
s	57.8	29.3	12.9	

stacle to educational reform is teachers' lack
ss to change.

	AGREE	NEITHER	DISAGREE	p
	37.7	39.0	23.2	.03
s	38.3	29.9	31.9	

equity should be defined in terms of equal
s to learn rather than equal educational

	AGREE	NEITHER	DISAGREE	p
	69.0	26.2	4.9	.17
s	67.6	29.6	2.8	

Table 15

Question 5(C): Level of confidence in estimate?

The following table represents the frequency distribution for each response category by program.

	(1)	(2)	(3)	(4)	(5)	(6)	
AL	1				1		
HC	1	1	1			1	
LC					2		
MP	2		1	1	1	1	
SP	1	1					
Total	5	2	2	1	4	2	N = 16

see Appendix B (Interview Scales) for complete description of categories.

Table 16

Question 6: What are the major responsibilities of a classroom teacher

The following table represents the frequency distribution for each response category by program.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
AL	3	3	1	2		2		
HC	2		2	1	2	4		
LC	2	2	1	3		2		
MP	1	2	1	2		2		
SP		2	1		2	5		
Total	8	9	6	8	4	15	0	N = 50

see Appendix B (Interview Scales) for complete description of categories

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Table 17

Question 7(A): How would you describe your primary goal as a teacher?

The following table represents the frequency distribution for each response category by program.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
AL		2		3			
HC			1	2	1	2	2
LC	1			2	1	3	1
MP	1			4		1	
SP				1	3	2	